The Report committee for Wendy Wanjen Leu

Certifies that this is approved version of the following report:

The Relationship between Social Games and Social Behavior on Social Media

APPROVED BY

SUPERVISING COMMITTEE:

_____

Matthew Eastin

_____

Vincent Cicchirillo

The Relationship between Social Games and Social Behavior on Social Media

by

Wendy Wanjen Leu, B.A.

Professional Report

Presented to the Faculty of the Graduate School

of the University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Master of Arts

The University of Texas at Austin

December 2010

The Relationship between Social Games and Social Behavior on Social Media

by

Wendy Wanjen Leu, M.A.

The University of Texas at Austin, 2010

Supervisor: Matthew Eastin

Social games have become popular on social media such as Facebook and MySpace. While there are plenty of market reports regarding social media, the related academic research is limited. This study applies Homans' cost-reward structure from Social Exchange Theory to investigate how social games change people's social behavior on social media. The concepts of rewards are drawn from the gratifications of social media use, and the concepts of costs are drawn form the symptoms of media addiction. In a survey of 323 college students, participants' perceived rewards and costs of Facebook use and game play are measured. The results indicate social game players perceived significantly higher costs of Facebook use than non-players. In addition, costs of Facebook use and costs of game play also play important roles to influence social game players' willingness to play more social games. Discussion and limitations are provided.

Table of Contents

List of Tables

Lists of Figures

Introduction

Researchers and marketers are paying greater attention to topics related to social media such as Facebook. The popularity of social media is soaring, and the number of applications on them has skyrocketed. To date, Facebook offers more than 10,000 applications of all different types ("InsideNetwork," 2010), and one of those types is what is known as a social game. Social games are free online applications accessed through social networking sites such as MySpace and Facebook (Shambora, 2009). They allow existing virtual contacts via social-networking sites to match wits for bragging rights (Swartz, 2009a). Gamers can invite friends to join them in the games, and they can also send updates on their progress to their friends (Shambora, 2009).

Social games are free, widely available, easy to play, and they require only a few minutes at a time to play (Swartz, 2009a). Once hooked, however, players spend real money on virtual goods to help them advance to higher levels (Shambora, 2009). And, although playing such games requires only short spurts of time, some games such as Restaurant City and Pet Society never end. Social game companies' designers continually add levels, making players come back for more (Shambora, 2009).

Social game play is another way of nourishing relationships. The best games are not impressive in terms of technology, though they're quite adept at harnessing media that let players interact. For social games, this means letting far-flung friends and families share an activity, rather than just photos and wall posts (Lacy, 2009). In short, social games are *free social media applications that people can play as well as use to interact with friends*. In this study, social games are further defined in terms of some of their specific features, seven in all: theme-oriented nature, virtual goods,

management-related environment, involvement of friends and relatives, their "social" nature, ranking systems, and knowledge-oriented nature.

The first of these features is the social games' tendency toward themes. Each social game has its own theme, like a farm theme, a hospital theme, a hotel, restaurant, and so forth. The second feature is the games' virtual goods. Social games allow players to operate their business with virtual money. The games offer products or services that players can purchase with virtual currency they earn in the social games or with real currency. The third feature is the trend for these games to be management-related. In Restaurant City, for example, players own restaurants, and provide different menus and different decors. The fourth feature is that friends and relatives get involved. A primary feature of social games is that players can play the games with their friends on social media – including real-life friends as well as net friends. Players can also invite friends to join the social games. Fifth, social games make online social behavior easy and interesting. In social games, players can take part in a variety of interactions; they can send gifts to one another, help take care of friends' businesses, damage friends' businesses, and/or employ. The sixth feature is the ranking system. Players start to play at a very basic level then they can improve their products and services, and, as they develop their businesses, attain higher and higher ranks. Finally, the seventh feature is the involvement of knowledge. Here, social games are tied to real world knowledge. For instance, in FarmVille, as players plant crops they must emulate real farming situations including the seasonal market.

The Growth of Social Games

The popularity of social media sites, like Facebook and MySpace, provided a solid foundation for the boom in social games. The social-gaming movement took off in 2007, when Facebook opened its site to applications developers (Swartz, 2009b).

Currently, the largest social games developer, Zynga, has 45 million daily active Facebook users and 197 million monthly active users. CrowdStar, Zynga's closest competitor, has 5 million daily active Facebook users and 48 million monthly active users. As for the third largest social games developer, Electronic Arts, the third biggest, its active Facebook users are 7 million daily and 42 million monthly ("InsideNetwork," 2010).

In February 2010, a survey conducted by the Information Solutions Group for PopCap Games, found that the average game session lasts over half an hour (that was how long 61% of the participants played). Ten percent of participants said they played more than three hours at a time. While one-fourth of players (26%) were new to social games, more than half (56%) have been playing for more than a year. One-third (35%) said they were playing more games over the last three months, compared to 10% who said they were playing less (Snider, 2010).

In short, there is no shortage of market reports that have surveyed the use of social games or have estimated the profitability of social games developers. Nevertheless, few studies have reported *how social games change people's behavior, especially their social behavior on social media sites*.

Theories and Previous Studies

Social Exchange Theory

Social Exchange Theory provides a unique viewpoint on changes in social behavior. In order to understand the social behavior of human in economic undertakings, in "Social Behavior as Exchange," Homans (1958) first developed this theory by combining various theories from economics, psychology, and sociology.

According to Social Exchange Theory (SET), social behavior is defined as "*an exchange of goods, material goods but also non-material ones, such as the symbols of approval or prestige*" (P.606). Meaning, people that give to others try to receive from them as well; people that receive from others are under pressure to give in return. This cycle of influence tends to work out at equilibrium to a balance in the exchanges. In an exchange, what a person gives may be a cost to him or her, just as what he or she gets may be a reward. His or her behavior changes less as the gap between the two - the profit - tends to reach a maximum (Homans, 1958).

Homans argued that motivation is based on people's desire for rewards. The natural human tendency is to increase rewards while minimizing costs. He also emphasized that all social interactions are associated with both rewards and costs. The key points that formed the foundation of his SET include: 1) all human beings add up the cost, rewards and profits in their interactions with others in all aspects of social interaction, 2) all social activity is associated with rewards, costs, profits and/or losses, and 3) human beings have a tendency to desire profit from their social interactions and will seek ways of maximizing the value of their social interactions by choosing more profitable interactions over less profitable interactions (Homans, 1961).

The core of SET is its *cost-reward structure*. In applying Social Exchange Theory to this research, it is assumed that people who use social media pay some "costs" while also reaping some "rewards." These people try to maximize their "profits" and minimize their "losses." While people using social media seek social interactions to improve their profits, social games have become an option that might lead to a desirable outcome. That said, once people become players of social games, the cost-reward structure of their social media use changes. The change in costs and rewards should lead to a change in people's social behavior on social media sites. For example, people who profit from social games will be willing to play more social games since social games are profitable for them to increase their profit of social media use; on the other hand, people who lose from playing social games will be unwilling to play anymore or will eventually quit playing.

In the following sections, the rewards of using social media will be discussed in terms of Uses and Gratification Theory, and the costs of using social media will be discussed in terms of Media Addiction.

Uses and Gratifications Theory

Instead of the mechanistic perspective that focuses on direct effect of media and takes audience as passive ones, Uses and Gratifications Theory serves as a psychological perspective that stresses individual use and choice (Fisher, 1978). This theory makes five assumptions: 1) communication behavior, including selection and use of the media, is goal-directed or motivated; 2) people select and use communication sources and messages to satisfy felt needs and desires; 3) social and psychological factors guide, filter, or mediate communication behavior; 4) media compete with other forms of communication for selection, attention, and use; and 5) people are usually more influential than media in media-person relationships (Rubin, 1993; Rubin, 2002).

Starting in the 1940s, the Uses and Gratifications perspective has been applied to study different kinds of media use. Early Use and Gratification research included investigations on radio (Herzog, 1944; Lazarsfeld & Stanton, 1944; Lazarsfeld & Stanton, 1949), newspaper (Berelson, 1954), and television (Blumler & McQuail, 1969; Levy, 1978). The theory resurfaced in the 1970s, having been refined with two assumptions: 1) methodologically, self-reports provide accurate data about media use, and 2) value judgments about the cultural significance of media content or using media content should be suspended until researchers fully are able to understand motives and gratifications (Blumler, Katz, & Gurevitch, 1974).

When the Internet became popular, research started to focus upon this new medium. In fact, not only have the general usage of the Internet been studied in terms of uses and gratifications (Kaye, 1998; Korgaonkar & Wolin, 1999; Parker & Plank, 2000; Amiel & Sargent, 2004; Ebersole, 2006), but specific issues related to the Internet usage have also been investigated separately with this perspective. For example, virtual community (Sangwan, 2005), Internet service provider (T. F. Stafford, M. R. Stafford, & Schkade, 2004), online news (Lin, Salwen, & Abdulla, 2005; Diddi & LaRose, 2006), e-commerce (Eighmey & McCord, 1998; Foucault & Scheufele, 2002; Joines, Scherer, & Scheufele, 2003), blog (Trammell, Tarkowski, Hofmokl, & Sapp, 2006; Chung & Kim, 2008), and social media (Bumgarner, 2007; Raacke & Bonds-Raacke, 2008; Joinson, 2008; Sheldon, 2008; Urista, Dong, & Day, 2009; Park, Kee, & Valenzuela, 2009).

In this study, the research regarding the uses and gratifications of social media are further reviewed. *Table 1* represents a list of those studies along with the motivational predictors of social media use.

[Table 1] Comparison of Uses and Gratifications Studies

Study	Bumgarner (2007)	Raacke & Bonds-Raacke (2008)	Joinson (2008)	Sheldon (2008)	Urista, Dong, & Day (2009)	Park, Kee, & Valenzuela (2009)
G1	Social utility	To keep in touch with old friends	Social connection	Relationship maintenance	Efficient communicat-ion	Socializing
G2	Directory	To keep in touch with current friends	Shared identities	Passing time	Convenient communicat-ion	Entertainm-ent
G3	Voyeurism	To post or look at pictures	Photographs	Virtual community	Curiosity about others	Self-status seeking
G4	Herd instincts	To make new friends	Content	Entertainm-ent	Popularity	Information
G5	Collection and connection	To locate old friends	Social investigation	Coolness	Relationship formation and reinforc-ement	
G6	Personal expression	To learn about events	Social network surfing	Companion-ship		
G7	Initiating relationship	To post social functions	Status updates			
G8		To feel connected				
G9		To share information about oneself				
G10		For academic purpose				
G11		For dating purpose				

* G: Gratification

In combination, these studies suggest that the gratifications of using social media can be classified into six factors: *1) socializing* (Bumgarner, 2007; Raacke & Bonds-Raacke, 2008; Joinson, 2008; Sheldon, 2008; Urista et al., 2009; Park et al., 2009), *2) entertainment and passing time* (Raacke & Bonds-Raacke, 2008; Joinson,

2008; Sheldon, 2008; Park et al., 2009), *3) social-status seeking* (Sheldon, 2008; Urista et al., 2009; Park et al., 2009), *4) information* (Bumgarner, 2007; Raacke & Bonds-Raacke, 2008; Joinson, 2008; Urista et al., 2009; Park et al., 2009), *5) self-expression* (Bumgarner, 2007; Raacke & Bonds-Raacke, 2008; Joinson, 2008; Urista et al., 2009), and *6) companionship and belonging* (Bumgarner, 2007; Raacke & Bonds-Raacke, 2008; Sheldon, 2008; Park et al., 2009). Since this research is under the application of Social Exchange Theory, these gratifications will be taken as the *"rewards"* of using social media.

Media Addiction

While Uses and Gratification is applied to define the rewards of using social media, studies on Media Addiction (Kandell, 1998; Young, 1998; Young, 1999; LaRose, Lin, & Eastin, 2003) will contribute to developing the costs of using social media. *Table 2* lists those studies along with their findings on the negative consequences of Media Addiction.

[Table 2] Comparison of Media Addiction Studies

Study	Kandell (1998)	Young (1998)	Young (1999)	LaRose, Lin & Eastin (2003)
S1	Increase of preoccupation	Academic problem	Familiar problem	Preoccupation
S2	Increase of investment	Relationship problem	Academic problem	Tolerance
S3		Financial problem	Occupational problem	Relapse
S4		Occupational problem		Withdrawal
S5		Physical problem		Loss of control
S6				Life consequences
S7				Concealment
S8				Escapism

* S: Symptom

Kandell's study (1998) laid out the symptoms of Internet addiction. These often include an increased preoccupation with, and investment of resources (time, energy, money, etc.) in Internet activities. Also, when not online, the individual can experience unpleasant feelings (e.g., anxiety, depression, emptiness, loneliness) that are relieved by engaging in Internet-related behaviors.

Young's study (1998) classified the problems of Internet addiction into five categories: academic, relationship, financial, occupational, and physical. She further (1999) specialized relationship problems into familiar problems, while academic problems and occupational problems were the other two negative consequences of Internet addiction.

LaRose, Lin, and Eastin (LaRose et al., 2003), summarized the general symptoms of Internet addiction as preoccupation, tolerance, relapse, withdrawal, loss of control, life consequences, concealment, and escapism. They underscored that Internet addicts tend to reduce time allocated to other activities and disregard the consequent disruptions in finances, family, or work.

For this study, the *"costs"* of using social media in terms of Social Exchange Theory can be categorized as: *1) time* (Kandell, 1998; Young, 1998; Young, 1999; LaRose et al., 2003), *2) money* (Kandell, 1998; Young, 1998; LaRose et al., 2003), *3) chances of using other media* (Kandell, 1998; LaRose et al., 2003), *4) negative emotions* (Kandell, 1998; LaRose et al., 2003), and *5) addictive problems* (Young, 1998; Young, 1999; LaRose et al., 2003).

Hypotheses

Based on the concept of SET, it is assumed that the playing of social games through social media could be categorized within the cost-reward structure. By

playing social games, social media user pays some "costs" and reaps some "rewards." Therefore:

H1a: Players will perceive higher rewards from using Facebook than non-players.

H1b: Players will perceive higher costs from using Facebook than non-players.

Additionally, players try to maximize their "rewards" and minimize their "costs" from using Facebook. Players' outcomes in terms of rewards and costs will be reflected in their willingness to play more or fewer social games. Hence:

H2a: Players with high rewards of Facebook use will be more willing to play more social games than players with low rewards of Facebook use.

H2b: Players with low costs of Facebook use will be more willing to play more social games than players with high costs of Facebook use.

Rather than integrating social gaming as one part of their using Facebook, players will also isolate the rewards and costs of playing social games; how well they do in social games, in terms of rewards and costs, will also be reflected in their willingness to play more or fewer social games. Players' inclination to play can be measured by observing the number of social games played. Thus, it is posited that:

H3a: Players with high rewards of game play will perceive higher willingness to play more social games than players with low rewards of game play.

H3b: Players with low costs of game play will perceive higher willingness to play more social games than players with high costs of game play.

H4a: Players with high rewards of game play will tend to play more social games than players with low rewards of game play.

H4b: Players with low costs of game play will tend to play more social games than players with high costs of game play.

Methodology

Research Design

Two groups of people were recruited as participants. The first group consisted of social game players, that is, Facebook users who had played at least one social game. The second group (the control group) consisted of non-players, Facebook users who had never played a social game.

An online questionnaire included five major sections: 1) general questions about Facebook use and game play; 2) questions about rewards and costs of Facebook use; 3) questions about rewards and costs of game play; 4) questions about willingness to play more social games; and 5) demographic questions.

Players answered all five sections. However, non-players skipped Section Three and Four. (See *Appendix 1* for details.)

Sample Design

Participants were students in the College of Communication at the University of Texas at Austin. All students were solicited through the Department of Advertising Participant Pool. There was no limitation on gender or school year; age was restricted to 18 through 60. The total number of participants was 323.

Data Collection

Students in classes participating in the Participant Pool received an announcement regarding the study. Each student was directed to the Participant Pool site (http://advertising.utexas.edu/research/pool/index.htm) where they

could get more information to decide whether or not to participate. Data was collected over four weeks, from October 7th, 2010 to November 4th, 2010.

Data Analysis

SPSS 16.0 was used to run all the analyses. An Independent Samples T-Test was run to test the perceived rewards and costs of Facebook use between players and non-players (*H1a* and *H1b*). Independent Samples T-Test and Two-ways ANOVA were run to test different players' willingness to play more social games (*H2a*, *H2b*, *H3a*, and *H3b*) and to test different players' tendency to play more social games in terms of number of games played (*H4a* and *H4b*).

In order to define different players, players were divided into two groups based on high versus low rewards of Facebook use. Although it is common to use the upper and lower 25th percentile to distinguish two extreme groups, 50% was applied in this study to maximize the sample size. This meant a median split was used to divide the players into players with high rewards of Facebook use and players with low rewards of Facebook use (to test *H2a*). The same method was also established to divide the players into players with high costs of Facebook use and players with low costs of Facebook use (to test *H2b*), players with high rewards of game play and players with low rewards of game play (to test *H3a* and *H4a*), as well as players with high costs of game play and players with low costs of game play (to test *H3b* and *H4b*).

Measurement

Seven-point scales were created to measure perceived rewards and costs of Facebook use, perceived rewards and costs of game play, as well as willingness to play social games. As discussed before, based on previous studies (Bumgarner,

2007; Raacke & Bonds-Raacke, 2008; Joinson, 2008; Sheldon, 2008; Urista et al., 2009; Park et al., 2009), the rewards of Facebook use can be categorized into six factors: socializing, entertainment and passing time, social-status seeking, information, self-expression, and companionship and belonging. The general rewards of Facebook use were measured as the average of these six factors. *Table 3* lists the scales of rewards of Facebook use.

[Table 3] Scales of Rewards of Facebook Use

Item (Note: N = 323; items on a seven-point scale.)	Mean	SD
Socializing (Cronbach's Alpha = .77)	4.62	0.94
Through Facebook, I can stay in touch with old friends	6.18	1.11
Through Facebook, I can stay in touch with current friends.	6.39	0.99
Through Facebook, I can make new friends.	3.76	1.78
Through Facebook, I can communicate with likeminded people.	4.56	1.47
Through Facebook, I can meet interesting people.	3.77	1.72
Through Facebook, I can find dates or develop a romantic relationship.	2.50	1.63
Through Facebook, I can talk about something with others.	5.49	1.41
Through Facebook, I can connect with people who otherwise have no connection.	4.34	1.82
Entertainment & Passing Time (Cronbach's Alpha = .91)	5.52	1.14
I use Facebook to pass time when bored.	6.19	1.26
I use Facebook to occupy my time.	5.51	1.59
I use Facebook to help me escape from stress.	4.76	1.84
I use Facebook to put off doing other things.	5.65	1.55
I like to look other people's pictures on Facebook.	5.93	1.26
Using Facebook is entertaining.	5.80	1.21
Using Facebook is exciting.	4.81	1.48
Using Facebook is enjoyable.	5.49	1.28
Social-status Seeking (Cronbach's Alpha = .82)	2.97	1.27
I use Facebook because it makes myself look cool.	2.95	1.53
I use Facebook because most of my friends do so.	4.89	1.61
I use Facebook because I feel pressure to participate.	2.76	1.61
I use Facebook to get emotional support from others.	2.66	1.66
I use Facebook to get social support from others.	3.43	1.78
I use Facebook to develop my career through group participation.	3.06	1.71
Information (Cronbach's Alpha = .87)	4.99	1.13
Via Facebook, I can learn about something new.	5.09	1.51
Via Facebook, I can know what is trendy.	4.76	1.49
Via Facebook, I can understand certain people better.	5.01	1.42
Via Facebook, I can know what to talk about with certain people.	4.74	1.50
Via Facebook, I can find out events.	5.91	1.12
Via Facebook, I can get useful information about product or service.	4.41	1.65

Self-expression (Cronbach's Alpha = .88)	4.41	1.20
Using Facebook allows me to share information about myself.	5.45	1.33
Using Facebook lets me craft my identity.	4.39	1.56
Using Facebook make other people understand who I am.	4.45	1.50
I try to make my profile represent what kind of person I am.	5.02	1.52
I like to see how other people react my profile.	4.45	1.63
I adjust my profiles based on how other people react to it.	3.28	1.70
I compare myself to other people on Facebook.	3.85	1.81
Companionship & Belonging (Cronbach's Alpha = .90)	3.68	1.35
Via Facebook, I can feel like I belong to a community.	4.13	1.70
Via Facebook, I can find companionship.	3.51	1.71
Via Facebook, I can feel less lonely.	3.46	1.73
I use Facebook so I won't be alone.	2.64	1.63
I use Facebook when there is no one to talk or be with.	3.67	1.88
Facebook helps me feel connected to everyone.	4.74	1.61
Facebook keeps me from being left out.	3.61	1.77

As discussed, the costs of Facebook use can be categorized into five factors: time, money, chances of using other media, negative emotions, and addictive problems. Within chances of using other media, media were further separated as traditional media, other Web sites, and video games. The general costs of Facebook use were measured as the average of these five factors. *Table 4* lists the scales of costs of Facebook use.

[Table 4] Scales of Costs of Facebook Use

Item (Note: N = 323; items on a seven-point scale.)	Mean	SD
Time (Cronbach's Alpha = .80)	5.06	1.55
I have spent increasing amounts of time on Facebook.	4.80	1.72
I have stayed on Facebook longer than intended.	5.32	1.69
Money (Cronbach's Alpha = .95)	1.39	1.26
I have spent increasing amounts of money on Facebook.	1.39	1.28
I have spent more money on Facebook than intended.	1.39	1.31
Chances of Using Other Media (Cronbach's Alpha = .95)	3.16	1.47
Chances of Using Other Media – Traditional Media (Cronbach's Alpha = .95)	3.18	1.55
After I started to use Facebook, I have watched television less frequently on weekdays.	3.68	1.89
After I started to use Facebook, I have watched television less frequently on weekends.	3.39	1.84
After I started to use Facebook, I have read newspaper less frequently on weekdays.	3.24	1.89
After I started to use Facebook, I have read newspaper less frequently on weekends.	3.23	1.87
After I started to use Facebook, I have read magazine less frequently on weekdays.	3.25	1.82
After I started to use Facebook, I have read magazine less frequently on weekends.	3.20	1.78
After I started to use Facebook, I have listen to radio less frequently on weekdays.	2.72	1.69

After I started to use Facebook, I have listen to radio less frequently on weekends.	2.70	1.69
Chances of Using Other Media – Other Web Sites (Cronbach's Alpha = .97)	3.53	1.78
After I started to use Facebook, I have visited other Web sites less frequently on weekdays.	3.56	1.82
After I started to use Facebook, I have visited other Web sites less frequently on weekends.	3.50	1.80
Chances of Using Other Media – Video Games (Cronbach's Alpha = .99)	2.88	1.82
After I started to use Facebook, I have played video games less frequently on weekdays.	2.89	1.86
After I started to use Facebook, I have played video games less frequently on weekends.	2.88	1.82
Negative Emotions (Cronbach's Alpha = .71)	2.58	1.20
I have felt anxious when I was unable to access to Facebook.	3.45	1.90
I have felt depressed when the time I use Facebook was limited.	2.29	1.45
I have felt guilty after I stayed on Facebook for a long time.	4.52	1.87
I have felt uncomfortable because of the content on Facebook.	2.79	1.74
I have felt stressed because I thought I was not good at using Facebook.	1.80	1.33
Addictive Problems (Cronbach's Alpha = .86)	3.19	1.44
I have felt addicted to Facebook.	4.15	2.07
I have been unable to stop once I got on Facebook.	3.51	2.00
I have neglected family because I was using Facebook.	2.15	1.54
I have neglected friends because I was using Facebook.	2.10	1.49
I have neglected other important activities (e.g., school, work) to use Facebook.	4.05	1.94
I have deprived my sleep because of staying on Facebook.	3.17	2.03

The structures of measuring rewards and costs of Facebook use were applied to measure the rewards and costs of game play: rewards of game play can be categorized as six factors (socializing, entertainment and passing time, social-status seeking, information, self-expression, and companionship and belonging), and costs of game play can be categorized as five factors (time, money, chances of using other media, negative emotions, and addictive problems). The general rewards of game play were measured as the average of the six factors, and the general costs of game play were measured as the average of the five factors. *Table 5* lists the scales of rewards of game play, and *Table 6* lists the scales of costs of game play.

[Table 5] Scales of Rewards of Game Play

Item (Note: N = 89; items on a seven-point scale.)	Mean	SD
Socializing (Cronbach's Alpha = .91)	3.34	1.33
Through social games, I can stay in touch with old friends.	3.37	1.68
Through social games, I can stay in touch with current friends.	3.61	1.74

Through social games, I can make new friends.	3.40	1.74
Through social games, I can communicate with likeminded people.	3.38	1.57
Through social games, I can meet interesting people.	3.09	1.56
Through social games, I can find dates or develop a romantic relationship.	2.17	1.43
Through social games, I can talk about something with others.	3.38	1.63
Through social games, I can connect with people who otherwise have no connection.	3.15	1.59
Entertainment & Passing Time (Cronbach's Alpha = .87)	4.46	1.26
I use social games to pass time when bored.	5.00	1.64
I use social games to occupy my time.	4.49	1.66
I use social games to help me escape from stress.	3.92	1.88
I use social games to put off doing other things.	4.21	1.65
I like to look other people's pictures about social games.	2.82	1.73
Playing social games is entertaining.	4.81	1.56
Playing social games is exciting.	4.11	1.56
Playing social games is enjoyable.	4.70	1.42
Social-status Seeking (Cronbach's Alpha = .93)	2.33	1.33
I play social games because it makes myself look cool.	2.35	1.44
I play social games because most of my friends do so.	3.03	1.61
I play social games because I feel pressure to participate.	2.51	1.47
I play social games to get emotional support from others.	2.20	1.42
I play social games to get social support from others.	2.44	1.47
I play social games to develop my career through group participation.	2.17	1.55
Information (Cronbach's Alpha = .96)	2.91	1.41
Via social games, I can learn about something new.	3.00	1.50
Via social games, I can know what is trendy.	2.98	1.50
Via social games, I can understand certain people better.	2.96	1.55
Via social games, I can know what to talk about with certain people.	3.08	1.56
Via social games, I can find out events.	2.73	1.59
Via social games, I can get useful information about product or service.	2.73	1.61
Self-expression (Cronbach's Alpha = .93)	2.89	1.40
Playing social games allows me to share information about myself.	2.90	1.55
Playing social games lets me craft my identity.	2.75	1.57
Playing social games make other people understand who I am.	2.67	1.51
I try to make my game performance represent what kind of person I am.	2.92	1.75
I like to see how other people react my game performance.	3.15	1.65
I adjust my game performance based on how other people react to it.	2.92	1.67
I compare myself to other people on social games.	3.36	1.80
Companionship & Belonging (Cronbach's Alpha = .95)	2.65	1.41
Via social games, I can feel like I belong to a community.	3.06	1.64
Via social games, I can find companionship.	2.63	1.57
Via social games, I can feel less lonely.	2.66	1.62
I play social games so I won't be alone.	2.43	1.52
I play social games when there is no one to talk or be with.	3.25	1.65
Social games help me feel connected to everyone.	2.62	1.51
Social games keep me from being left out.	2.53	1.52

[Table 6] Scales of Costs of Game Play

Item (Note: N = 89; items on a seven-point scale.)	Mean	SD
Time (Cronbach's Alpha = .84)	3.15	1.59
I have spent increasing amounts of time on social games.	2.91	1.59
I have stayed on social games longer than intended.	3.38	1.83
Money (Cronbach's Alpha = .98)	1.67	1.47
I have spent increasing amounts of money on social games.	1.69	1.51
I have spent more money on social games than intended.	1.65	1.46
Chances of Using Other Media (Cronbach's Alpha = .98)	2.66	1.59
Chances of Using Other Media – Traditional Media (Cronbach's Alpha = .98)	2.65	1.66
After I started to play social games, I have watched television less frequently on weekdays.	2.83	1.87
After I started to play social games, I have watched television less frequently on weekends.	2.67	1.76
After I started to play social games, I have read newspaper less frequently on weekdays.	2.66	1.76
After I started to play social games, I have read newspaper less frequently on weekends.	2.72	1.78
After I started to play social games, I have read magazine less frequently on weekdays.	2.72	1.79
After I started to play social games, I have read magazine less frequently on weekends.	2.70	1.77
After I started to play social games, I have listen to radio less frequently on weekdays.	2.46	1.69
After I started to play social games, I have listen to radio less frequently on weekends.	2.43	1.67
Chances of Using Other Media – Other Web Sites (Cronbach's Alpha = .98)	2.66	1.73
After I started to play social games, I have visited other Web sites less frequently on weekdays.	2.65	1.72
After I started to play social games, I have visited other Web sites less frequently on weekends.	2.67	1.78
Chances of Using Other Media – Video Games (Cronbach's Alpha = .99)	2.71	1.82
After I started to play social games, I have played video games less frequently on weekdays.	2.72	1.85
After I started to play social games, I have played video games less frequently on weekends.	2.70	1.81
Negative Emotions (Cronbach's Alpha = .86)	2.23	1.32
I have felt anxious when I was unable to access to social games.	2.53	1.73
I have felt depressed when the time I play social games was limited.	2.22	1.59
I have felt guilty after I stayed on social games for a long time.	3.48	1.95
I have felt uncomfortable because of the content on social games.	2.00	1.33
I have felt stressed because I thought I was not good at playing social games.	2.17	
Addictive problems (Cronbach's Alpha = .91)	2.52	1.45
I have felt addicted to social games.	3.00	1.95
I have been unable to stop once I got on social games.	2.80	1.81
I have neglected family because I was playing social games.	2.18	1.68
I have neglected friends because I was playing social games.	2.13	1.55
I have neglected other important activities (e.g., school, work) to play social games.	2.66	1.76
I have deprived my sleep because of staying on social games.	2.37	1.63

As for the willingness to play more social games, five new items were built into the measurement. The willingness to play more social games was defined as the average of these five items. *Table 7* lists the scales of willingness to play more social games.

[Table 7] Scales of Willingness to Play More Social Games

Item (Note: N = 89; items on a seven-point scale.)	Mean	SD
Willingness (Cronbach's Alpha = .93)	3.14	1.42
If someone recommends a social game, I would like to give it a try.	3.38	1.66
If there is a new social game that just launched, I would like to give it a try.	2.99	1.56
If there is a social game that is similar with the one(s) I play now, I am willing to play it, too.	3.20	1.58
If there is a social game that is very different from the one(s) I play now, I am willing to play it, too.	3.18	1.65
Overall speaking, I am willing to play more social games.	2.94	1.56

Results

Sample

There were a total 323 valid responses, 79 (24%) came from male participants and 244 (76%) came from female participants. The majority (62%) of the participants fell on the age range between 20 and 29 (*SD* = .50). The total number of players was 89 (28%), while the total number of non-players was 234 (72%). On average, each player has played about two social games (*M* = 1.96, *SD* = 1.36).

Perceived Rewards and Costs of Facebook Use

Perceived Rewards of Facebook Use

Independent Samples T-Tests examined the scores on the perceived rewards from the players and the non-players. The results indicated that on average, the players perceived higher general rewards (*M* = 4.46, *SD* = .83) than the non-players (*M* = 4.33, *SD* = .89), but the difference between these two groups was not statistically significant, $t(321) = 1.22$, $p > .05$. Therefore, *H1a* was not supported by the data.

Among different types of rewards, the data indicated that the players perceived significantly higher rewards related to "social-status seeking" (*M* = 3.29, *SD* = 1.21) than the non-players (*M* = 2.85, *SD* = 1. 28), $t(321) = 2.79$, $p < .01$. In addition, the players also perceived significantly higher rewards related to "companionship and belonging" (*M* = 3.95, *SD* = 1.22) than the non-players (*M* = 3.58, *SD* = 1.38), $t(321) = 2.18$, $p < .05$.

Perceived Costs of Facebook Use

Independent Samples T-Tests also examined the scores on the perceived costs from the players and the non-players. The results indicated that on average, the players perceived higher general costs (M = 3.29, SD = .94) than the non-players (M = 3.00, SD = .99), and the difference between these two groups was statistically significant, $t(321) = 2.40$, $p < .05$. Therefore, *H1b* was supported by the data.

When it came to different types of costs, the data indicated that the players perceived significantly higher costs related to "money" (M = 1.75, SD = 1.63) than the non-players (M = 1.25, SD = 1. 06), $t(321) = 3.19$, $p < .01$. In addition, the players also perceived significantly higher costs related to "negative emotions" (M = 2.89, SD = 1.25) than the non-players (M = 2.47, SD = 1.16), $t(321) = 2.88$, $p < .01$.

Furthermore, within the costs related to "chances of using other media," even though there were not statistically significant differences between players and non-players on perceived costs of traditional media ($t(321) = 1.38$, $p > .05$) and on perceived costs of other Web sites ($t(321) = 1.41$, $p > .05$), the results indicated there was a statistically significant difference on the perceived costs of playing other video games, $t(321) = 2.48$, $p < .05$, with the players perceived higher costs (M = 3.29, SD = 1.77) than the non-players (M = 2.73, SD = 1.82).

Willingness: Monitored by Facebook Use

The results of Independent Samples T-Tests indicated there was a significant difference between players with high rewards of Facebook use and players with low rewards of Facebook use, $t(87) = 11.45$, $p < .001$; and there was also a significant difference between players with high costs of Facebook use and players with low costs of Facebook use, $t(87) = 10.67$, $p < .001$.

Players that fell in the intersection of high/low rewards and high/low costs were further utilized to test *H2a* and *H2b* within a Two-Way ANOVA. The results showed no main effect for rewards. Willingness for the players with high rewards of Facebook use (M = 3.19, SD = 1.46) and willingness for the players with low rewards of Facebook use (M = 3.07, SD = 1.39) did not differ significantly, $F(1, 85) = .02$, $p > .05$. Therefore, *H2a* was not supported by the data.

However, there was a main effect for perceived costs. Willingness for the players with high costs of Facebook use (M = 3.40, SD = 1.36) and willingness for the players with low costs of Facebook use (M = 2.74, SD = 1.44) differed significantly, $F(1, 85) = 4.68$, $p < .05$. Thus, *H2b* was supported by the data. The means of willingness to play more social games was shown in *Figure 1*.

Willingness: Monitored by Game Play

The results of Independent Samples T-Tests indicated that there was a significant difference between players with high rewards of game play and players with low rewards of game play, $t(87) = 13.05$, $p < .001$; and there was also a significant difference between players with high costs of game play and players with low costs of game play, $t(87) = 12.42$, $p < .001$.

The players that fell in the intersection of high/low rewards and high/low costs were further utilized to test *H3a* and *H3b* within a Two-Way ANOVA. The results showed that there was a main effect for rewards. Willingness for the players with high rewards of game play (M = 3.85, SD = 1.20) and willingness for the players with low rewards of game play (M = 2.41, SD = 1.26) differed significantly, $F(1, 85) = 8.35$, $p < .01$. Therefore, *H3a* was supported by the data.

Also, there was a main effort for costs. Willingness for the players with high costs of game play (M = 3.86, SD = 1.09) and willingness for the players with low

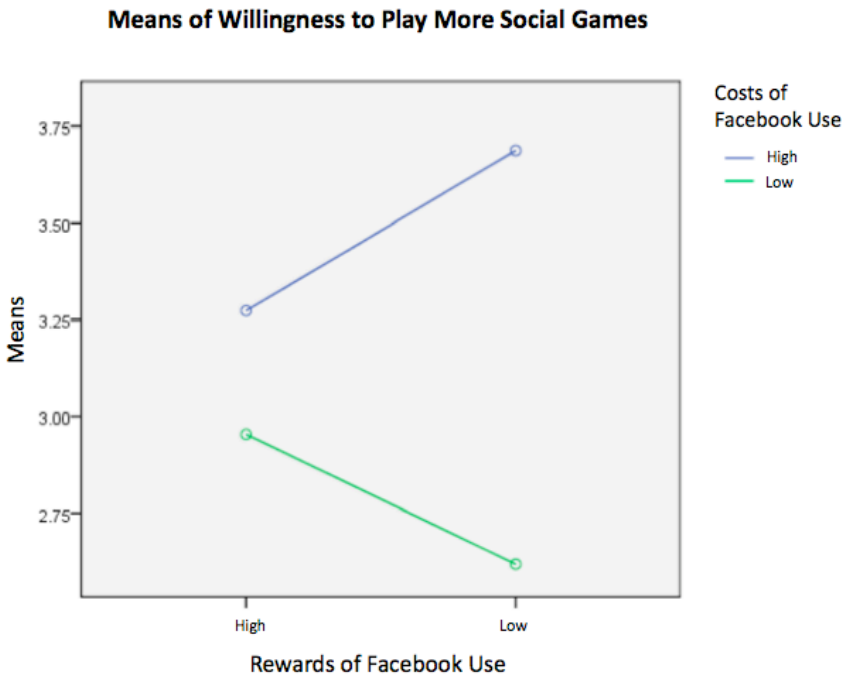
costs of game play (M = 2.41, SD = 1.36) differed significantly, $F(1, 85) = 8.35$, $p < .01$. Thus, *H3b* was not supported by the data since the results were opposite. The means of willingness to play more social games was shown in *Figure 2*.

Number of Games: Monitored by Game Play

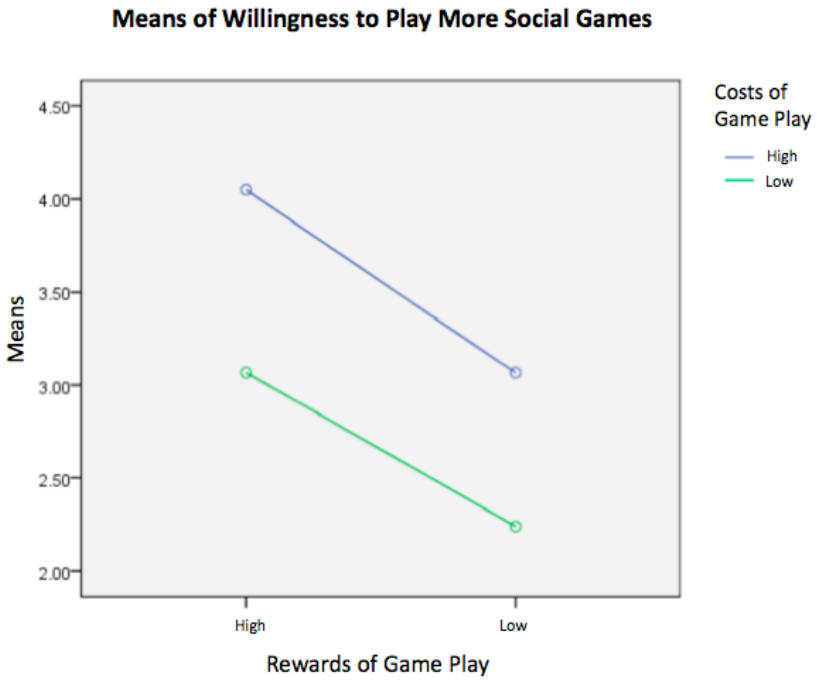
The number of games for the players with high rewards from game play (M = 2.16, SD = 1.49) and number of games for the players with low rewards from game play (M = 1.75, SD = 1.18) did not differ significantly, $F(1, 85) = .12$, $p > .05$. Therefore, *H4a* was not supported by the data.

However, there was a main effort for costs. Here, the number of games for the players with high costs from game play (M = 2.36, SD = 1.57) and number of games for the players with low costs from game play (M = 1.55, SD = .95) differed significantly, $F(1, 85) = 6.50$, $p < .05$. Thus, *H4b* was not supported by the data since the results were not as predicted. The means of willingness to play more social games was shown in *Figure 3*.

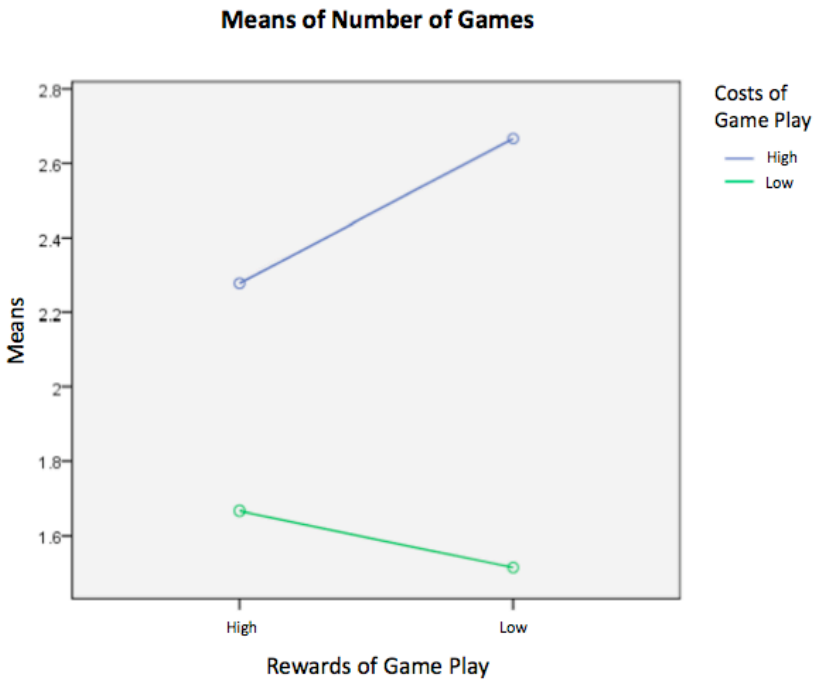
[Figure 1] Means of Willingness (by Facebook Use)



[Figure 2] Means of Willingness (by Game Play)



[Figure 3] Means of Number of Games (by Game Play)



Discussion

Perceived Rewards and Costs of Facebook Use

Based on the results, the players and non-players did not perceive significant difference in general rewards of Facebook use. However, among various types of rewards, the players did perceive significantly higher rewards of Facebook use from "social-status seeking" and "companion and belonging" than the non-players. This meant, although social media provide a platform that enables users to obtain these two kinds of rewards, users perceive higher rewards by playing social games.

Surprisingly, social game players did not perceive higher rewards related to "entertainment and passing time" than non-players, and it might further illustrate the fact that for players, social gaming is less about entertaining and more about getting identification and recognition from peers. Since social games have the characteristics of interacting with friends, by performing well in social games, players are able to enhance their relationships; such that players gain their peers' respect, obtain their helpful support, and become closer to their peers by increasing the number of times and types of interactions. These positive outcomes helped players perceive higher rewards of social-status seeking as well as companionship and belonging.

In terms of costs, players perceived significantly higher costs of Facebook use than non-players. It proved the idea that in general, players paid more costs on Facebook because of playing social games. Furthermore, among various types of costs, the players perceived significant higher costs from "money" and "negative emotions." In addition, the players also perceived significantly higher costs from playing video games less frequently.

These findings could be taken as evidence that in order to obtain the rewards defined as performing well or achieving some goals in games, players would be more willing to spend their money on purchasing virtual currency or virtual products, and would feel negative emotions when they had difficulty in accessing the games or when they lacked the resources (such as time, virtual currency, virtual products, etc.) to help them improve their performance and/or achievement.

Willingness and Number of Games

According to the results, willingness for the players with high rewards of Facebook use and for the players with low rewards of Facebook use did not differ significantly. On the contrary, the results also indicated that the willingness for the players with high costs of Facebook use and for the players with low costs of Facebook use did differ significantly. However, *H2b* was not supported because the result was opposite to the hypothesized direction. The players with high costs from using Facebook did not perceive lower willingness to play more social games; instead, they perceived higher willingness. The variety of Facebook use could explain these findings. While willingness to play more social games referred solely to the concept of game play, Facebook use actually contained plenty of various behaviors and activities involved. Therefore, players highly rewarded by Facebook use did not obtain the relevant rewards only from playing the games. Players paying high costs of Facebook use did not receive the relevant costs only from playing the games, either. In other words, the differences between high rewards/costs of Facebook use and low rewards/costs of Facebook use did not simply come from game play. Playing social games might indeed increase players' perceived rewards and costs of Facebook use, but there might be other factors that can also influence players' perception. Therefore, it was difficult to present an accurate reflection of willingness by just looking at the rewards and costs of Facebook use.

In order to investigate the willingness construct more precisely, the rewards and costs of game play were further utilized. The results showed that there were main effects for both rewards and costs of game play. The willingness for the players with high rewards of game play and for the players with low rewards of game play differed significantly. Meanwhile, the results indicated that the willingness for the players with high costs of game play and for the players with low costs of game play also differed significantly. However, *H3b* was not supported since the results were again not in direction predicted. Here, players with high costs of game play did not perceive lower willingness of playing more social games; instead, they perceived higher willingness.

While high rewards of game play did lead to high willingness of playing more social games, the relationship between costs and willingness seemed conflicting and did not match Homans' (1961) theory that human beings tend to maximize the value of their social interactions by choosing more profitable interactions over less profitable interactions. One possible reason, however, might be the addiction to games. Players with high costs already made lots of efforts on social games, and these efforts might let them stick on the games as well as reluctant to give up playing. Therefore, even though the rewards decreased (e.g. their friends stopped playing and they could not earn peers' respect and support from social gaming any more), the players with high costs still had higher willingness.

In terms of number of games, the results indicated that there was no main effect for rewards of game play. Number of games for the players with high rewards of game play and for the players with low rewards of game play did not differ significantly. As for costs of game play, the results indicated that the willingness for the players with high costs of game play and for the players with low costs of game play differed significantly. However, similar to the willingness findings, costs of game play were not as directionally predicted for number of games.

According to the results, the players with high costs of game play did not play fewer but more social games than did the players with low costs of game play. A possible explanation would be the direction of relationship. While willingness predicted future behavior, the number of games reflected current behavior. Therefore, it was not the rewards and costs of game play that influenced the number of games, but rather, it was the number of games that influenced how players perceived rewards and costs of game play. Simply, players perceived high costs of game play because they played large amount of games.

Limitations

There were two major limitations in this study. First, as mentioned before, the sample size was too small. Although there were 323 participants, most of them were non-players. The total number of players was only 89, and therefore there were not enough samples to run the ANOVA with the upper and lower 25th percentile. The second limitation in this study was the definition of "Facebook use." Players were expected to answer questionnaire by respectively rating the perceived rewards and perceived costs of both Facebook use and game play; however, the latter is part of the former. When answering the questions related to Facebook use, instead of integrating game play into Facebook use, some players might have excluded game play from Facebook use. In sum, players might have interpreted the definition of Facebook use in different ways, and that could have influenced how each participant rated the perceived rewards and perceived costs.

Appendixes

Appendix 1: Questionnaire

Questionnaire Outline

Section 1: General Questions about Facebook Use and Game Play

Section 2: Questions about Rewards and Costs of Facebook Use

Section 2.1: Questions about Rewards of Facebook Use

Section 2.2: Questions about Costs of Facebook Use

Section 3: Questions about Rewards and Costs of Game Play *(Players Only)*

Section 3.1: Questions about Rewards of Game Play

Sectton 3.2: Questions about Costs of Game Play

Section 4: Questions about Willingness to Play More Social Games *(Players Only)*

Section 5: Demographic Questions

Section 1: General Questions about Facebook Use and Game Play

1. Do you have Facebook account(s)?
   a) Yes
   b) No => Done. Not necessary to do the following questions.
2. Do you play social games on Facebook?
   * Social games are free online applications that people can play as well as interact with friends on social media. The features of social media includes: theme related, virtual goods related, management related, friends and relatives involved, social involved, rank involved, and knowledge involved. Examples of social games are *FarmVille*, *Café World*, *FishVille*, *Pet Society*, *Restaurant City*, etc.

Online applications like *Texas HoldEm Poker* or *Bejeweled Blitz* do NOT count in social games in this study.

a) Yes => Answer all questions

b) No => Answer Section 2.1, Section 3.1, and Section 5

3. How many social games do you play now? _____

   * Social games are free online applications that people can play as well as interact with friends on social media. The features of social media includes: theme related, virtual goods related, management related, friends and relatives involved, social involved, rank involved, and knowledge involved. Examples of social games are *FarmVille*, *Café World*, *FishVille*, *Pet Society*, *Restaurant City*, etc. Online applications like *Texas HoldEm Poker* or *Bejeweled Blitz* do NOT count in social games in this study.

Section 2.1: Questions about Rewards of Facebook Use

Based on your own experience, please rate the following statements regarding the use of Facebook. The number you pick can range from 1 to 7.

Socializing

4. Through Facebook, I can stay in touch with old friends.
5. Through Facebook, I can stay in touch with current friends.
6. Through Facebook, I can make new friends.
7. Through Facebook, I can communicate with likeminded people.
8. Through Facebook, I can meet interesting people.
9. Through Facebook, I can find dates or develop a romantic relationship.
10. Through Facebook, I can talk about something with others.
11. Through Facebook, I can connect with people who otherwise have no connection.

Entertainment & Passing Time

12. I use Facebook to pass time when bored.
13. I use Facebook to occupy my time.
14. I use Facebook to help me escape from stress.
15. I use Facebook to put off doing other things.
16. I like to look other people's pictures on Facebook.
17. Using Facebook is entertaining.
18. Using Facebook is exciting.
19. Using Facebook is enjoyable.

Social-status Seeking

20. I use Facebook because it makes myself look cool.
21. I use Facebook because most of my friends do so.
22. I use Facebook because I feel pressure to participate.
23. I use Facebook to get emotional support from others.
24. I use Facebook to get social support from others.
25. I use Facebook to develop my career through group participation.

Information

26. Via Facebook, I can learn about something new.
27. Via Facebook, I can know what is trendy.
28. Via Facebook, I can understand certain people better.
29. Via Facebook, I can know what to talk about with certain people.
30. Via Facebook, I can find out events.
31. Via Facebook, I can get useful information about product or service.

Self-expression

32. Using Facebook allows me to share information about myself.

33. Using Facebook lets me craft my identity.
34. Using Facebook make other people understand who I am.
35. I try to make my profile represent what kind of person I am.
36. I like to see how other people react my profile.
37. I adjust my profiles based on how other people react to it.
38. I compare myself to other people on Facebook.

Companionship & Belonging

39. Via Facebook, I can feel like I belong to a community.
40. Via Facebook, I can find companionship.
41. Via Facebook, I can feel less lonely.
42. I use Facebook so I won't be alone.
43. I use Facebook when there is no one to talk or be with.
44. Facebook helps me feel connected to everyone.
45. Facebook keeps me from being left out.

Section 2.2: Questions about Costs of Facebook Use

Based on your own experience, please rate the following statements regarding the use of Facebook. The number you pick can range from 1 to 7.

Time

46. I have spent increasing amounts of time on Facebook.
47. I have stayed on Facebook longer than intended.
48. How many hours do you spend on Facebook per week? _____

Money

49. I have spent increasing amounts of money on Facebook.

50. I have spent more money on Facebook than intended.
51. How much have you spent on Facebook? _____

Chances of Using Other Media

52. After I started to use Facebook, I have watched television less frequently on weekdays.
53. After I started to use Facebook, I have watched television less frequently on weekends.
54. After I started to use Facebook, I have read newspaper less frequently on weekdays.
55. After I started to use Facebook, I have read newspaper less frequently on weekends.
56. After I started to use Facebook, I have read magazine less frequently on weekdays.
57. After I started to use Facebook, I have read magazine less frequently on weekends.
58. After I started to use Facebook, I have listen to radio less frequently on weekdays.
59. After I started to use Facebook, I have listen to radio less frequently on weekends.
60. After I started to use Facebook, I have visited other Web sites less frequently on weekdays.
61. After I started to use Facebook, I have visited other Web sites less frequently on weekends.
62. After I started to use Facebook, I have played video games less frequently on weekdays.
63. After I started to use Facebook, I have played video games less frequently on weekends.

Negative Emotion

64. I have felt anxious when I was unable to access to Facebook.
65. I have felt depressed when the time I use Facebook was limited.
66. I have felt guilty after I stayed on Facebook for a long time.
67. I have felt uncomfortable because of the content on Facebook.

68. I have felt stressed because I thought I was not good at using Facebook.

Addictive Problems

69. I have felt addicted to Facebook.
70. I have been unable to stop once I got on Facebook.
71. I have neglected family because I was using Facebook.
72. I have neglected friends because I was using Facebook.
73. I have neglected other important activities (e.g., school, work) to use Facebook.
74. I have deprived my sleep because of staying on Facebook.

Section 3.1: Questions about Rewards of Game Play *(Players Only)*

Based on your own experience, please rate the following statements regarding the play of social games. The number you pick can range from 1 to 7.

Socializing

75. Through social games, I can stay in touch with old friends.
76. Through social games, I can stay in touch with current friends.
77. Through social games, I can make new friends.
78. Through social games, I can communicate with likeminded people.
79. Through social games, I can meet interesting people.
80. Through social games, I can find dates or develop a romantic relationship.
81. Through social games, I can talk about something with others.
82. Through social games, I can connect with people who otherwise have no connection.

Entertainment & Passing Time

83. I use social games to pass time when bored.

84. I use social games to occupy my time.
85. I use social games to help me escape from stress.
86. I use social games to put off doing other things.
87. I like to look other people's pictures about social games.
88. Playing social games is entertaining.
89. Playing social games is exciting.
90. Playing social games is enjoyable.

Social-status Seeking

91. I play social games because it makes myself look cool.
92. I play social games because most of my friends do so.
93. I play social games because I feel pressure to participate.
94. I play social games to get emotional support from others.
95. I play social games to get social support from others.
96. I play social games to develop my career through group participation.

Information

97. Via social games, I can learn about something new.
98. Via social games, I can know what is trendy.
99. Via social games, I can understand certain people better.
100. Via social games, I can know what to talk about with certain people.
101. Via social games, I can find out events.
102. Via social games, I can get useful information about product or service.

Self-expression

103. Playing social games allows me to share information about myself.
104. Playing social games lets me craft my identity.
105. Playing social games make other people understand who I am.

106. I try to make my game performance represent what kind of person I am.
107. I like to see how other people react my game performance.
108. I adjust my game performance based on how other people react to it.
109. I compare myself to other people on social games.

Companionship & Belonging

110. Via social games, I can feel like I belong to a community.
111. Via social games, I can find companionship.
112. Via social games, I can feel less lonely.
113. I play social games so I won't be alone.
114. I play social games when there is no one to talk or be with.
115. Social games help me feel connected to everyone.
116. Social games keep me from being left out.

Section 3.2: Questions about Costs of Game Play *(Players Only)*

Based on your own experience, please rate the following statements regarding the play of social games. The number you pick can range from 1 to 7.

Time

117. I have spent increasing amounts of time on social games.
118. I have stayed on social games longer than intended.
119. How many hours do you spend on social games per week? _____

Money

120. I have spent increasing amounts of money on social games.
121. I have spent more money on social games than intended.
122. How much have you spent on social games? _____

Chances of Using Other Media

123. After I started to play social games, I have watched television less frequently on weekdays.
124. After I started to play social games, I have watched television less frequently on weekends.
125. After I started to play social games, I have read newspaper less frequently on weekdays.
126. After I started to play social games, I have read newspaper less frequently on weekends.
127. After I started to play social games, I have read magazine less frequently on weekdays.
128. After I started to play social games, I have read magazine less frequently on weekends.
129. After I started to play social games, I have listen to radio less frequently on weekdays.
130. After I started to play social games, I have listen to radio less frequently on weekends.
131. After I started to play social games, I have visited other Web sites less frequently on weekdays.
132. After I started to play social games, I have visited other Web sites less frequently on weekends.
133. After I started to play social games, I have played video games less frequently on weekdays.
134. After I started to play social games, I have played video games less frequently on weekends.

Negative Emotion

135. I have felt anxious when I was unable to access to social games.

136. I have felt depressed when the time I play social games was limited.
137. I have felt guilty after I stayed on social games for a long time.
138. I have felt uncomfortable because of the content on social games.
139. I have felt stressed because I thought I was not good at playing social games.

Addictive Problems

140. I have felt addicted to social games.
141. I have been unable to stop once I got on social games.
142. I have neglected family because I was playing social games.
143. I have neglected friends because I was playing social games.
144. I have neglected other important activities (e.g., school, work) to play social games.
145. I have deprived my sleep because of staying on social games.

Section 4: Questions about Willingness to Play More Social Games *(Players Only)*

Based on your own experience, please rate the following statements regarding the play of social games. The number you pick can range from 1 to 7.

146. If someone recommends a social game, I would like to give it a try.
147. If there is a new social game that just launched, I would like to give it a try.
148. If there is a social game that is similar with the one(s) I play now, I am willing to play it, too.
149. If there is a social game that is very different from the one(s) I play now, I am willing to play it, too.
150. Overall speaking, I am willing to play more social games.

Section 5: Demographic Questions

151. What is your gender?
    a) Male
    b) Female
152. What is your age?
    a) 19 and under
    b) 20~29
    c) 30~39
    d) 40~49
    e) 50~59
    f) 60 and beyond
153. What is your school year?
    a) Freshman
    b) Sophomore
    c) Junior
    d) Senior
    e) Graduate student (Master)
    f) Graduate student (Ph.D.)

References

Amiel, T., & Sargent, S. L. (2004). Individual differences in Internet usage motives. *Computers in Human Behavior*, *20*(6), 711-726. doi:10.1016/j.chb.2004.09.002

Berelson, B. (1954). What" missing the newspaper" means. *Public opinion and propaganda: a book of readings*, 263.

Blumler, J. G., Katz, E., & Gurevitch, M. (1974). Utilization of mass communication by the individual. *The uses of mass communications: Current perspectives on gratifications research*, 19–31.

Blumler, J. G., & McQuail, D. (1969). *Television in politics: Its uses and influence*. University of Chicago Press.

Bumgarner, B. (2007). You have been poked: Exploring the uses and gratifications of Facebook among emerging adults. *First Monday*, *12*. Retrieved from http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/viewArticle/2026/1897

Chung, D. S., & Kim, S. (2008). Blogging activity among cancer patients and their companions: Uses, gratifications, and predictors of outcomes. *Journal of the American Society for Information Science and Technology*, *59*(2), 297-306. doi:10.1002/asi.20751

Diddi, A., & LaRose, R. (2006). Getting hooked on news: Uses and gratifications and the formation of news habits among college students in an Internet

environment. *Journal of Broadcasting & Electronic Media*, *50*(2), 193–210.

Ebersole, S. (2006). Uses and Gratifications of the Web among Students. *Journal of Computer-Mediated Communication*, *6*(1), 0-0. doi:10.1111/j.1083-6101.2000.tb00111.x

Eighmey, J., & McCord, L. (1998). Adding Value in the Information Age: Uses and Gratifications of Sites on the World Wide Web. *Journal of Business Research*, *41*(3), 187-194. doi:10.1016/S0148-2963(97)00061-1

Fisher, B. A. (1978). *Perspectives on human communication*. MacMillan Publishing Company.

Foucault, B. E., & Scheufele, D. A. (2002). Web vs campus store? Why students buy textbooks online. *Journal of Consumer Marketing*, *19*(5), 409-423. doi:10.1108/07363760210437632

Herzog, H. (1944). What do we really know about daytime serial listeners. *Radio research*, *1943*, 3–33.

Homans, G. (1961). *Social behavior: its elementary forms*. Retrieved from http://www.archive.org/details/socialbehaviorit00homa

Homans, G. C. (1958). Social Behavior as Exchange. *The American Journal of Sociology*, *63*(6), 597-606.

Inside Network. (2010). Inside Network. *All Facebook*. Retrieved April 28, 2010, from http://statistics.allfacebook.com/developers/leaderboard/

Joines, J. L., Scherer, C. W., & Scheufele, D. A. (2003). Exploring motivations for

consumer Web use and their implications for e-commerce. *Journal of Consumer Marketing*, *20*(2), 90-108. doi:10.1108/07363760310464578

Joinson, A. N. (2008). Looking at, looking up or keeping up with people?: motives and use of facebook. In *Proceeding of the twenty-sixth annual SIGCHI conference on Human factors in computing systems* (pp. 1027-1036). Florence, Italy: ACM. Retrieved from http://portal.acm.org.ezproxy.lib.utexas.edu/citation.cfm?id=1357213

Kandell, J. (1998). Internet addiction on campus: The vulnerability of college students. *CyberPsychology & Behavior*, *1*(1), 11–17.

Kaye, B. K. (1998). Uses and gratifications of the World Wide Web: From couch potato to Web potato. *Atlantic Journal of Communication*, *6*(1), 21–40.

Korgaonkar, P. K., & Wolin, L. D. (1999). A multivariate analysis of web usage. *Journal of advertising research*, *39*(2).

Lacy, S. (2009). Social Gaming Scores in the Recession. *BusinessWeek Online*, 1. doi:Article

LaRose, R., Lin, C. A., & Eastin, M. S. (2003). Unregulated internet usage: Addiction, habit, or deficient self-regulation? *Media Psychology*, *5*(3), 225–253.

Lazarsfeld, P. F., & Stanton, F. (1944). *Radio research, 1942-1943*. Ayer Co Pub.

Lazarsfeld, P. F., & Stanton, F. N. (1949). *Communications research, 1948-1949*. Arno Press, New York.

Levy, M. R. (1978). The audience experience with television news. *Journalism*

Monographs, *55*(1), 29.

Lin, C., Salwen, M. B., & Abdulla, R. A. (2005). Uses and gratifications of online and offline news: New wine in an old bottle. *Online news and the public*, 221–236.

Park, N., Kee, K. F., & Valenzuela, S. (2009). Being Immersed in Social Networking Environment: Facebook Groups, Uses and Gratifications, and Social Outcomes. *CyberPsychology & Behavior*, *12*(6), 729-733. doi:10.1089/cpb.2009.0003

Parker, B. J., & Plank, R. E. (2000). A uses and gratifications perspective on the Internet as a new information source. *American Business Review*, *18*(2), 43–49.

Raacke, J., & Bonds-Raacke, J. (2008). MySpace and Facebook: Applying the Uses and Gratifications Theory to Exploring Friend-Networking Sites. *CyberPsychology & Behavior*, *11*(2), 169-174. doi:10.1089/cpb.2007.0056

Rubin, A. M. (1993). Audience activity and media use. *Communication monographs*, *60*(1), 98–105.

Rubin, A. M. (2002). The uses-and-gratifications perspective of media effects. *Media effects: Advances in theory and research*, *2*, 525–548.

Sangwan, S. (2005). Virtual community success: a uses and gratifications perspective. In *System Sciences, 2005. HICSS'05. Proceedings of the 38th Annual Hawaii International Conference on* (p. 193c).

Shambora, J. (2009). Playing for Fun and Profit. *Fortune*, *160*(9), 43. doi:Article

Sheldon, P. (2008). Student favorite: Facebook & motives for its use. *Southwestern Journal of Mass Communication*, *23*(October), 39–53.

Sheldon, P. (n.d.). Student favorite: Facebook & motives for its use. *Southwestern Journal of Mass Communication*.

Snider, M. (2010, February 17). Social games: news and survey findings - Game Hunters: In search of video games and interactive awesomeness - USATODAY.com. Retrieved April 28, 2010, from http://content.usatoday.com/communities/gamehunters/post/2010/02/social-games-news-and-survey-findings/1?csp=obnetwork

Stafford, T. F., Stafford, M. R., & Schkade, L. L. (2004). Determining Uses and Gratifications for the Internet. *Decision Sciences*, *35*(2), 259-288. doi:10.1111/j.00117315.2004.02524.x

Swartz, J. (2009a). For social networks, it's game on. *USA Today*. Retrieved from http://ezproxy.lib.utexas.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=J0E118780704309&site=ehost-live

Swartz, J. (2009b, October 15). For social networks, it's game on - USATODAY.com. Retrieved April 28, 2010, from http://www.usatoday.com/tech/gaming/2009-10-15-games-hit-social-networks_N.htm

Trammell, K. D., Tarkowski, A., Hofmokl, J., & Sapp, A. M. (2006). Rzeczpospolita blogow [Republic of Blog]: Examining Polish Bloggers Through Content

Analysis. *Journal of Computer-Mediated Communication*, *11*(3), 702-722. doi:10.1111/j.1083-6101.2006.00032.x

Urista, M., Dong, Q., & Day, K. (2009). Explaining Why Young Adults Use MySpace and Facebook Through Uses and Gratifications Theory. *Human Communication A Journal of the Pacific and Asian Communication Association*, *12*(2), 215.

Young, K. (1998). Internet addiction: the emergence of a new clinical disorder. *CyberPsychology and Behavior*, *1*, 237–244.

Young, K. (1999). Internet addiction: symptoms, evaluation and treatment. *Innovations in clinical practice: a source book*, *17*, 19–31.